

Vibriosis (*Vibrio* spp.)

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Note: This chapter pertains to species of *Vibrio* **other** than *Vibrio cholerae* (e.g., *V. parahaemolyticus*, *V. vulnificus*, *V. alginolyticus*). For information about *V. cholerae* infection, refer to the chapter entitled “Cholera.”

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agent

Several *Vibrio* species (other than *V. cholerae*) have been recognized as causative agents of human diseases: *V. parahaemolyticus* causes acute diarrheal disease, and *V. vulnificus* and *V. alginolyticus* cause distinctive soft tissue infections rather than diarrheal illness. All three *Vibrio* spp. are ubiquitous in coastal waters.

B. Clinical Description and Laboratory Diagnosis

Infection by *V. parahaemolyticus* is characterized by watery diarrhea and abdominal cramps in the majority of cases, and is sometimes associated with nausea, vomiting, fever and headache, and bloody diarrhea. Rarely, wound infection and septicemia may be seen.

V. vulnificus infection causes septicemia in persons with chronic liver disease, chronic alcoholism or immunocompromised conditions. The disease appears 12 hours to three days after eating raw or undercooked seafood. Upon seeking medical care, one-third of patients present with shock, three-quarters of patients have distinctive bullous skin lesions, and there is often evidence of disseminated intravascular coagulation. About 50% of patients with primary septicemia will die.

V. alginolyticus has been associated with cellulitis and acute otitis media or externa in otherwise healthy seawater swimmers.

Laboratory diagnosis is based upon isolation of organism from stool or soft tissue lesions.

C. Reservoirs

Environmental reservoirs exist in coastal or estuarine waters (ocean bays). *V. vulnificus* is a part of normal marine flora and is the second most frequently isolated *Vibrio* species in Florida. Nearly all oysters (and 10% of crabs) harvested in the summer from the Chesapeake Bay contain this pathogen.

D. Modes of Transmission

V. parahaemolyticus and *V. vulnificus* are usually transmitted via the ingestion of raw or undercooked shellfish. *V. alginolyticus* and *V. vulnificus* can be transmitted through skin wounds exposed to estuarine water.

E. Incubation Period

The incubation period for *V. parahaemolyticus* is usually between 12 and 24 hours (range: 4 to 30 hours); the incubation period for *V. vulnificus* is 12 to 72 hours.

F. Period of Communicability or Infectious Period

Direct person-to-person spread has not been demonstrated.

G. Epidemiology

V. parahaemolyticus is a major cause of diarrheal disease in Japan. In the United States, it is the most commonly isolated *Vibrio* species in Florida. *V. vulnificus* is estimated to account for 90% of all seafood consumption related deaths in the United States. According to CDC studies, among *Vibrio*-related illnesses, *V. vulnificus* was isolated in 28 (39%) of 71 wound infections, and *V. alginolyticus* and *V. parahaemolyticus* were

isolated in 20% and 23%, respectively. The majority of cases were reported from Gulf Coast states (Alabama, Florida, Louisiana, Mississippi and Texas); however, reporting is voluntary, and numbers may not reflect the true number of cases in each state. In New Jersey, about 4 cases of non-cholera vibriosis are reported annually to NJDHSS.

2) REPORTING CRITERIA AND LABORATORY TESTING SERVICES

A. New Jersey Department of Health and Senior Services (NJDHSS) Case Definition

CASE CLASSIFICATION

A. CONFIRMED

A clinically compatible case, **AND**

- Isolation of organisms from clinical specimens.

B. PROBABLE

A clinically compatible case that is epidemiologically linked to a confirmed case by the NJDHSS.

C. POSSIBLE

Not used.

NOTE: See Section 3 C below for information on how to report a case.

B. Laboratory Testing Services Available

The Public Health and Environmental Laboratories (PHEL) will test stool specimens for the presence of *Vibrio* species other than *V. cholera* such as *V. parahaemolyticus* or any other species that may cause diarrheal disease, and confirm isolates from other laboratories. For more information, call the Enteric Laboratory at 609.292.7368. After authorization from the Infectious and Zoonotic Diseases Program (IZDP), PHEL will test implicated food items or water from a cluster or outbreak.

3) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify transmission sources of public health concern (*e.g.*, contaminated water or a contaminated lot of shellfish) and to stop transmission from such sources.
- To identify whether a case may be a source of infection for other persons, and if so, plan control measures accordingly.

B. Laboratory and Healthcare Provider Reporting Requirements

The New Jersey Administrative Code (N.J.A.C. 8:57-1.8) stipulates that laboratories and health care providers report (by telephone, confidential fax, over the Internet using the Communicable Disease Reporting System [CDRS] or in writing) all cases of vibriosis as defined by the reporting criteria in section 2A above to the local health officer having jurisdiction over the locality in which the patient lives, or, if unknown, to the health officer in whose jurisdiction the health care provider requesting the laboratory examination is located.

C. Local Department of Health Reporting and Follow-Up Responsibilities

1. Reporting Requirements

The New Jersey Administrative Code (N.J.A.C. 8:57-1.8) stipulates that each local health officer must report the occurrence of any case of vibriosis as defined by the reporting criteria in Section 2A above. Current

requirements are that cases be reported to the NJDHSS IZDP using the [CDS-1 form](#). A report can also be filed electronically over the Internet using the confidential and secure CDRS.

2. Case Investigation

- a. It is the health officer's responsibility to investigate the case by interviewing the patient and others who may be able to provide pertinent information.
- b. Following notification to the NJDHSS, the local health officer will be asked to assist in completing the official CDC [Cholera and Other Vibrio Illness Surveillance Report](#) form by interviewing the patient and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the healthcare provider or the medical record. Use the following guidelines in completing the form:
 - 1) Accurately record the "Demographic and Isolate Information," type of *Vibrio* isolated, source, and date of specimen collection. Be sure to include the patient's complete name and address appears at the top of the form.
 - 2) In the "Clinical Information" section, indicate the date of symptom onset, symptoms, and other medical information. *Note:* Regarding Question 8 (Pre-Existing Conditions) in this section, if immunodeficiency is a condition, do not indicate a patient's HIV status.
 - 3) Complete the "Epidemiologic Information" section. When asking about exposures, follow the incubation period guidelines provided on the form (e.g., "Did the patient travel in the 7 days before illness began?").
 - 4) Complete the "Seafood Investigation" section if illness is suspected to be associated with seafood consumption. Record any restaurants, oyster bars, or food stores at which seafood was obtained by the case-patient.
 - 5) If there have been several attempts to obtain patient information (e.g., the patient or healthcare provider does not return calls or respond to a letter, or the patient refuses to divulge information or is too ill to be interviewed), please fill out the form with as much information as possible. Please note on the form the reason why it could not be filled out completely. **If CDRS is used to report, enter the collected information into the "Comments" section.**
- c. After completing the form, attach lab report(s) and mail (in an envelope marked "Confidential") to the NJDHSS IZDP, or the report can be filed electronically over the Internet using the confidential and secure CDRS. The mailing address is:

New Jersey Department of Health and Senior Services.
Division of Epidemiology, Environmental and Occupational Health
Infectious and Zoonotic Diseases Program
P.O. Box 369
Trenton, NJ 08625-0369
- d. Institution of disease control measures is an integral part of case investigations. It is the local health officer's responsibility to understand, and, if necessary, institute the control guidelines listed below in Section 4, "Controlling Further Spread."

4) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (N.J.A.C. 8:57-1.12)

Foodhandlers with vibriosis related diarrhea are to be excluded from work.

Minimum Period of Isolation of Patient

Only after diarrhea has resolved, foodhandling employees may return to work.

Minimum Period of Quarantine of Contacts

None.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Reported Incidence Is Higher than Usual/Outbreak Suspected

If an outbreak is suspected, or if multiple cases are reported, investigate to determine the source of infection and mode of transmission. A contaminated vehicle (such as seafood) should be sought and applicable preventive or control measures should be instituted. If it is possible that the case(s) became infected through food, use of the NJDHSS Foodborne Illness Worksheets, [Patient Food History Listing](#), [Patient Symptoms Line Listing](#), and [Food-Specific Attack Rate Table Worksheet](#) forms will facilitate recording additional information. It is requested that the local health officer fax the completed forms to the NJDHSS IZDP. This information will help link other complaints from neighboring towns, thus helping to identify foodborne illness outbreaks. The IZDP should be consulted for determining the course of action to prevent further cases, and for the course of action required to implement disease surveillance for other cases that may cross several jurisdictions and therefore be difficult to identify at a local level.

Note: The NJDHSS Food and Drug Safety Program (FDSP) will provide policy and technical assistance with the environmental investigation. The Program can be contacted at 609.588.3123. The FDSP will coordinate the relevant follow-up with outside agencies if indicated.

D. Preventive Measures

Environmental Measures

Implicated food items from New Jersey or elsewhere in the United States must be removed from the environment. A decision about testing implicated food items will be made in consultation with the FDSP and the IZDP. If a commercial product is suspected, FDSP will coordinate follow-up with relevant outside agencies.

Note: The role of the FDSP is to provide policy and technical assistance with the environmental investigation such as interpreting the New Jersey Food Code, conducting a hazardous analysis and critical control point (HACCP) risk assessment, initiating enforcement actions and collecting food samples.

The general policy of the PHEL is to test food samples implicated in suspected outbreaks only, not single cases (except when botulism is suspected). The local health departments may suggest that the holders of food implicated in single case incidents locate a private laboratory that will test food, or store the food in their freezer for a period of time in the event additional reports are received. However, leftover food consumed by a single confirmed case within the incubation period may be considered for testing.

Personal Preventive Measures/Education

To avoid exposure to *V. parahaemolyticus*, recommend that individuals:

- Thoroughly cook seafood, especially oysters; even shellfish harvested from coastal United States waters have periodically been contaminated. When an outbreak is traced to an oyster bed, health officials recommend closing the oyster bed until conditions are less favorable for *V. parahaemolyticus*.
- Avoid exposure of open wounds to warm seawater.

Some tips for preventing *V. vulnificus* infections, particularly among immunocompromised patients, including those with underlying liver disease:

- Do not eat raw oysters or other raw shellfish.
- Cook shellfish (oysters, clams, mussels) thoroughly:
- For shellfish in the shell, either (a) boil until the shells open and continue boiling for 5 more minutes, or (b) steam until the shells open and then continue cooking for 9 more minutes. Do not eat those shellfish that do not open during cooking. Boil shucked oysters at least 3 minutes, or fry them in oil at least 10 minutes at 375°F.
- Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
- Eat shellfish promptly after cooking and refrigerate leftovers.
- Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters.
- Wear protective clothing (e.g., gloves) when handling raw shellfish.

Some tips preventing *V. alginolyticus* infection include:

- Do not eat raw oysters or other raw shellfish.
- Cook shellfish (oysters, clams, mussels) thoroughly.
- Avoid exposure of open wound or broken skin to warm salt or brackish water.

ADDITIONAL INFORMATION

There is no formal CDC surveillance case definition for vibriosis. CDC case definitions are used by state health departments and CDC to maintain uniform standards for national reporting. For reporting a case to the NJDHSS, always refer to the criteria in Section 2 A.

REFERENCES

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